

New year, new strategies: Athens teacher explores different approaches to math

By SARAH GUINN MESSENGER STAFF JOURNALIST 16 hrs ago



Ohio University professor and math coach Courtney Koestler walks around a Morrison-Gordon Elementary classroom while giving an algebra lesson to a classroom full of sixth graders.

Messenger photo by Sarah Guinn

With fresh sheets of paper and newly-sharpened pencils at the ready, Debbie Kroner's sixth grade Morrison-Gordon Elementary math students hit the ground running on the second day of school, taking on algebra.

Kroner, along with other Athens City Schools math teachers, had just completed an online course on "mathematical mindsets" with Stanford University professor Jo Boaler, facilitated by Ohio University and math specialist Courtney Koestler. Ready to test out strategies learned in the course, Kroner brought Koestler in to set up some hands-on learning.

Koestler showed students a 10-by-10 grid, among other exercises, then flashed an image highlighting all the boxes that made up the perimeter of the 100-box picture. Counting 10 boxes on each side of the square might lead a solver to assume 40 highlighted boxes, but Koestler warned students to take their time and not jump too fast into the problem.

Between showing the same problem to other kids, parents and teachers, Koestler has heard a range of answers including 36, 37, 38, 40 and 44.

Because the four corner boxes can't be counted twice, the solution to the problem is 36. While some students solved the problem by posing $10+10+8+8 = 36$, others offered a slew of additional possibilities.

The particular problem was a classic “low floor, high ceiling” task, Koestler said, which was a strategy Kroner and other math teachers learned in the online course offered last week. The idea is a student can enter the problem no matter their level, but also make it more challenging by solving it in multiple ways. She also added the problem “is also an excellent example of how young children can engage in deep algebraic thinking.”

At the beginning of sixth grade, students might not yet have a formal introduction to algebra, Koestler said, but would have plenty of informal understanding to drive the lesson.

Last week’s course moved Kroner to approach math differently this year, she said, and to pursue more collaborations with other teachers.

Though only in the first week of school, the new strategies “seemed to make a difference,” she said.

Low floor, high ceiling tasks can help students with math anxiety turn their phobias around and create a more positive environment, Koestler said. The approach expands math beyond being able to compute and how fast students can do it too, she added.

“Real-life math is much more broad than what’s been communicated through school math,” she said.

Taking a student-centered approach is also important, Koestler said, and allowing kids to make sense of math.

“(Math) shouldn’t be this subject that’s verbally memorized,” she said. “We don’t want a nation of math phobics. We can’t just keep having kids who hate math or who don’t understand that we really want kids to enjoy math. I see a lot of progress with people taking on this perspective and the pedagogical approaches we’ve been working on. These kids are amazing and that’s what convinced me ... and convinces parents and convinces administration what kids can do in these classrooms.”

SGUINN@ATHENSMESSENGER.COM; TWITTER @SARAHGMESSENGER